NATALIA YU. BABAEVA

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Natalia Yu. Babaeva received the M.S. degree (with honors) in physics and engineering from the Moscow Institute for Physics and Technology (MIPT), Moscow, Russia, in 1982 and the Ph.D. degree in Physics and Mathematics (with specialization in plasma physics and plasma chemistry) from the Russian Academy of Sciences, Moscow, in 1993. She was a Research Professor with the Pohang University of Science of Technology, Pohang, Korea, from 2001 to 2005. In January 2005, she joined Iowa State University, Ames, as a Research Scholar and in September 2008 she joined University of Michigan, Ann Arbor, as Assistant Research Scientist. Dr. Babaeva's research area is low temperature plasmas, their fundamental properties, their interaction with surfaces and their technological applications. She is involved in developing of multi-scale computer models employing hybrid methods which address different physical phenomena including lighting sources, materials processing, streamer evolution in air and liquids, biological, medical and environmental applications. Dr. Babaeva has authored two book chapters and more than 30 peer-reviewed scientific papers and authored or coauthored more than 90 conference proceedings and invited talks on topics related to plasma and electric discharges. In 2008 and 2011 she was the Co-Guest Editor of the 5th and 6th Special Issues on "Images in Plasma Science" of *IEEE Transactions on Plasma Science*. She is a member of the Executive Committee of the IEEE-NPSS Plasma Science and Applications Committee, the parent organization of the International Conference on Plasma Science (elected term 2011-2013).

EDUCATION

- M.S. with Honors, 1982, General Physics and Radiophysics, Moscow Institute for Physics and Technology (MIPT)
- Ph.D. in Physics and Mathematics (specialization field: Plasma Physics and Plasma Chemistry), 1993, Institute for High Temperatures, Russian Academy of Sciences. **Dissertation Title**: Numerical modeling of gas-dynamics phenomena in non-equilibrium plasmas of glow and microwave discharges.

LANGUAGES

- Russian
- English
- German (read, write)
- French (read with dictionary)

PROFESSIONAL EXPERIENCE

Sept 2008 – present : Assistant Research Scientist, University of Michigan

- High pressure plasma for medical and environmental applications: corona discharges, streamer branching in dense media.

- HID lamps modeling and two-dimensional plasma code development. Advising industrial collaborators with University of Michigan.

July 2010-present: Co-Guest Editor, 6th Triennial Special Issue on "Images in Plasma Science", *IEEE Transactions on Plasma Science, August 2011.*

- N. Yu. Babaeva and M. J. Kushner, "Guest Editorial: 6th Triennial Special Issue of the IEEE Transactions on Plasma Science Images in Plasma Science", IEEE Trans. Plasma Sci. vol. **39,** no. 11, p. 2057, November 2011.

July 2007-June 2008: Co-Guest Editor, 5th Triennial Special Issue on "Images in Plasma Science", *IEEE Transactions on Plasma Science, August 2008*

- N. Yu. Babaeva and M. J. Kushner, "Guest Editorial: 5th Triennial Special Issue of the IEEE Transactions on Plasma Science on Images in Plasma Science", Trans. Plasma Sci. **36**, 862 (2008).

2005 – August 2008: Research Scholar, Department of Electrical and Computer Engineering, Iowa State University, USA

- Moderate and high pressure plasma: Chemical-Oxygen-Iodine Lasers, corona discharges, streamer branching
- Low-pressure plasma: Capacitively Coupled Radio Frequency Plasma Sources, including Magnetically Enhanced Reactive Ion Etchers.
- Two-dimensional fluid code development: ion momentum, plasma chemistry Monte Carlo, magnetized plasma.
- Mentoring undergraduate students:

2001 - 2003: Research Assistant Professor
2003 - 2005: Research Associate Professor
Department of Electronic and Electrical Engineering, Pohang University of Science and Technology, South Korea

- Modeling of Capacitively Coupled Radio Frequency Plasma Sources
- Particle-in-cell/Monte Carlo and two-dimensional fluid code development for single- and dual radio frequency source.
- Modeling of dusty plasma
- Teaching at undergraduate and postgraduate level.

1993 – 2001: Senior Research Scientist, Institute for High Temperatures, Russian Academy of Sciences

- Modeling of dynamics of electric discharges, including glow, corona, microwave, streamer discharges and dielectric barrier discharges
- Modeling of chemical processes in weakly ionized plasmas, particularly for environmental applications
- Modeling of gas dynamic phenomena in non-equilibrium plasmas of glow and microwave discharges, particularly shock wave propagation and structure in gas discharge plasmas
- Development of accurate numerical methods for modelling electric discharge and gas dynamic phenomena
- Supervising work of graduate students and research associates

1992 – 1993: Research Scientist: Institute for High Temperatures, Russian Academy of Sciences
1986 – 1991: Junior Research Scientist: Institute for High Temperatures, Russian Academy of Sciences
1982 – 1985: Postgraduate Research Associate, Moscow Institute for Physics and Technology

- Modeling of propagation of electromagnetic waves in non-uniform and nonlinear media

AWARDS/RECOGNITION

- **October-December 2000: Invited Guest Researcher of the German Academic Exchange Service (DAAD) under the program - Study visits for foreign academics to the Federal Republic of Germany, Aachen University of Technology, Gasentladungstechnik, Aachen, Germany.**
  Research work on dielectric barrier discharge modelling (discharges on surfaces of dielectric) (with Univ. Prof.Dr. rer. nat. G. Pietsch, Grundgebiete Der Elektrotechnik Und Gasentladungstechnik).

- **October-November 1999:**
  AAAS and NSF, Best Russian woman-scientist award (trip to USA).

- **May - July 1997: Invited Guest Researcher, Eindhoven University of Technology, Eindhoven, the Netherlands**
  Research work on streamer modeling in dense media, destroying phenols and biological contaminating agents in water (with Dr.ir. E.M. van Veldhuizen, Department of Technical Physics, Division of Particle Physics)

Synergistic Activities:

Editorship	1. Co-Guest Editor of the Fifth Triennial Issue on Images in Plasma Science of IEEE Transactions on Plasma Science, 2007-2008
	2. Co-Guest Editor of the Sixth Triennial Issue on Images in Plasma Science of IEEE Transactions on Plasma Science, 2010-2011
Reviewer (total more than 100 reviews)	J. Phys. D: Appl. Phys., IEEE Trans. Plasma Sci., Plasma Sources Science and Technol. on topics of streamer propagation and branching, discharges in liquids and plasma-medical applications, 1996-present (total more than 100 reviews)
Dutch and NSF Research Proposals Review	1. Dutch Technology Foundation STW Full Proposal 10755. Proposal Title: "Exploring a new medium for high-power switching: supercritical fluids", (2009)
	2. NSF proposal review: NSF 08-557, Proposal Number:1057175 Proposal Title: "CAREER: Micro- and Nano-Scale Plasma Discharges in High Density Fluids", (2010).
	3. NSF proposal review. Proposal Number: 1102250 Proposal Title: "Laser Diagnositcs and Simulation of Enhanced Chemical Energy Conversion via Direct Plasma Coupling", (2010).
	4. NSF proposal review. Proposal Number: 1151097 Proposal Title: "CAREER: Understanding Laser Induced Plasmas at Phase Boundaries for Nanoparticle Formation and Synthesis in Liquids - An Integrated Research and Education Program" (2011).

5. Review of project for the DOE Small Business Innovation Research (SBIR/STTR): " Adaptive Kinetic-Fluid Solver for Low Temperature Plasmas", Phase I

6. Review of project for the DOE Small Business Innovation Research (SBIR/STTR): " Complete Simulation Software for Magnetron Sputter Deposition", Phase I

Session Chair

Session: "Collision Data For and From Plasma Applications", 61st Annual Gaseous Electronics Conference, Dallas, Texas (2008).
http://meetings.aps.org/Meeting/GEC08/sessionindex2/?SessionEventID=92308

Session: "Partially Ionized Plasmas/Space Plasmas", 38th International Conference on Plasma Science, June 26-30, Chicago, IL (2011)
https://engineering.purdue.edu/ICOPS2011/DOCS/ICOPS%20Program%20detailed.pdf

Session: "Plasma Biology and Medicine, Special Session", 20th International Symposium on Plasma Chemistry, July 24-29, Philadelphia (2011).
http://ispc20.plasmainstitute.org/program/ISPC-20_Program_web.pdf

Students Supervised (2006-present)

(2012) Juline Shoeb (University of Michigan, March 2012 joins Lam research Corporation): nonPDPSIM code training.
(2010) Kyle Stewart (University of Michigan): Computer modeling of breakdown in water.
(2009) Shireen Faizi (University of Michigan): Computer modeling of the effect of low-temperature plasma on human skin.
(2008) Samantha Eisheid (Iowa State University): Modeling High Density Chemical Vapor Deposition.
(2007) Luis A. Garcia (Iowa State University): Plasma Excited Chemical-Oxygen-Iodine Lasers.
(2006) Laura Miller (Iowa State University): Modeling of Plasma Bullet and Plasma Plume for bio-medical applications.

Professional memberships

Sigma Xi, the Scientific Research Society
American Vacuum Society (AVS) Member 957029509
American Physical Society (APS) Member 61086037
Institute of Electrical and Electronic Engineers (IEEE) Member 90818660
American Association for the Advancement of Science (AAAS) 40519822

Professional Interests:

- Plasma physics, plasma chemistry, computational plasma physics, applications of non-equilibrium discharges in medicine and biology
- New area: Biological and emerging applications of plasmas, High pressure and micro-plasmas, Plasmas in liquids, Gas discharge lamp, Plasma chemistry and combustion, Plasma aerodynamics, Ionospheric phenomena
- Developing computer codes (Fluid and Particle-in-Cell) addressing low pressure (1 mTorr to 10 Torr) and high pressure (up to a few atm) plasma equipment.
- Proficient in FORTRAN and C/C++ languages.

PUBLICATIONS AND PRESENTATIONS

Book Chapters

1. **N. Yu. Babaeva** and G. V. Naidis, "Modeling of Streamer Propagation," in: *Electrical Discharges for Environmental Purposes: Fundamentals and Applications*, (ed. E. M. van Veldhuizen), Nova Science Publishers, Inc., Huntington, New York, Chapter 3, pp.21-48 (2000).

2. S. J. Kim, F. Iza, **N. Yu. Babaeva**, S. H. Lee, H.J. Lee, and J. K. Lee, "Advanced Simulations for Industrial Plasma Applications", in *Advanced Plasma Technology*, ed. R. D'agostino, P. Favia, and Y. Kawai, H. Ikegami, N. Sato, and F. Arefi-Khonsari, pp. 35-53, Wiley-VCH Verlag (2007). http://onlinelibrary.wiley.com/doi/10.1002/9783527622184.ch3/summary

IEEE Transactions on Plasma Science Special Issues Guest Editorials

3. **N. Yu. Babaeva** and M. J. Kushner, "Guest Editorial: 5th Triennial Special Issue of Transactions on Plasma Science on Images in Plasma Science", IEEE Trans. Plasma Sci. (IEEE Transactions on Plasma Science) vol. **36**, pp. 862-863 (2008). http://ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=4570254 Link using DOI: http://dx.doi.org Enter Digital Object Identifier: 10.1109/TPS.2008.925808

4. **N. Yu. Babaeva** and M. J. Kushner, "Guest Editorial: 6th Triennial Special Issue of the IEEE Transactions on Plasma Science Images in Plasma Science", IEEE Trans. Plasma Sci. (IEEE Transactions on Plasma Science) vol. **39**, no. 11, p. 2057, November 2011. http://ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=6020809 Link using DOI: http://dx.doi.org Enter Digital Object Identifier: 10.1109/TPS.2011.2164108

Refereed Journal Publications:

5. **N. Yu. Babaeva,** A. Kh. Mnatsakanyan and G. V. Naidis, "Dynamics of Nitrogen Discharges in Beams of Electromagnetic Radiation", *Fiz. Plazmy* **18**, 1055-1063 (1992). Engl.Transl.: *Sov. J. Plasma Phys.* vol. **18,** pp. 549-554 (1992). (New title of the journal: *Plasma Physics Reports*).

6. **N. Yu. Babaeva**, A. Kh. Mnatsakanyan and G. V. Naidis, "The Simulation of Shock Wave Propagation in a Gas Discharge Developing in Nitrogen," *High Temperatures*, vol. **31**, Issue 4, pp. 670-673 (1993) Engl. Transl.: *High Temperatures*, vol. **31**, 617-620 (1993). ISSN: 00403644

7. **N. Yu. Babaeva** and G. V. Naidis, "Simulation of positive streamers in air in weak uniform electric fields", *Phys. Lett. A* (*Physics Letters A*) vol. **215**, pp. 187-190 (1996). http://www.sciencedirect.com/science/article/pii/0375960196002253 Link using DOI: http://dx.doi.org Enter Digital Object Identifier: 10.1016/0375-9601(96)00225-3.

8. **N. Yu. Babaeva** and G. V. Naidis, "Two-dimensional modelling of positive streamer dynamics in nonuniform electric fields in air", *J. Phys. D: Appl. Phys. (Journal of Physics D: Applied Physics)* vol. **29,** pp. 2423-2431 (1996). http://iopscience.iop.org/0022-3727/29/9/029 Link using DOI: http://dx.doi.org Enter Digital Object Identifier: 10.1088/0022-3727/29/9/029

9. **N. Yu. Babaeva** and G. V. Naidis, "Dynamics of positive and negative streamers in air in weak uniform electric fields", *IEEE Trans. Plasma Sci. (IEEE Transactions on Plasma Science)* vol. **25**, pp. 375-379 (1997). http://ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=602514 Link using DOI: http://dx.doi.org Enter Digital Object Identifier: 10.1109/27.602514

10. **N. Yu. Babaeva** and G. V. Naidis, "Two-dimensional modeling of positive streamer propagation in flue gases in sphere-plane gaps", *IEEE Trans. Plasma Science (IEEE Transactions on Plasma Science)* vol. **26**, pp. 41-45 (1998). http://ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=659531 Link using DOI: http://dx.doi.org Enter Digital Object Identifier: 10.1109/27.659531

11. **N. Yu. Babaeva** and G. V. Naidis, "Modeling of positive streamers in liquid argon**",** *Tech. Phys. Lett. (Technical Physics Letters)* vol. **25,** no.2, pp. 91-94 (1999). http://www.springerlink.com/content/266733768050l037/ Link using DOI: http://dx.doi.org Enter Digital Object Identifier: 10.1134/1.1262391

12. **N. Yu. Babaeva** and G. V. Naidis, "On streamer dynamics in dense media", *J. Elecrostatics (Journal of Electrostatics)* vol. **53**, pp. 123-133 (2001). http://www.sciencedirect.com/science/article/pii/S0304388601001358 Link using DOI: http://dx.doi.org Enter Digital Object Identifier: 10.1016/S0304-3886(01)00135-8

13. **N. Yu. Babaeva** and G. V. Naidis, "Simulation of stepped propagation of positive streamers in SF_6", *J. Phys. D: Appl. Phys. (Journal of Physics D: Applied Physics)* vol. **35,** 132-136 (2002). http://iopscience.iop.org/0022-3727/35/2/305/ Link using DOI: http://dx.doi.org Enter Digital Object Identifier: 10.1088/0022-3727/35/2/305

14. **N. Yu. Babaeva**, J. K. Lee and H. C. Kim, "Non-stationary charging of a dust grain in decaying streamer-channel plasma", *Plasma Sources Sci. Technol. (Plasma Sources Science and Technology)* vol. **13**, 127–134 (2004). http://iopscience.iop.org/0963-0252/13/1/016. Link using DOI: http://dx.doi.org Enter Digital Object Identifier: 10.1088/0963-0252/13/1/016

15. J. K. Lee, **N. Yu. Babaeva**, H. C. Kim, O. V. Manuilenko, and J. W. Shon, "Simulation of Capacitively Coupled Single- and Dual-Frequency RF Discharges", *IEEE Trans. Plasma Sci. (IEEE Transactions on Plasma Science)* vol. **32**, 47-53 (2004). http://ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=1291601 Link using DOI: http://dx.doi.org Enter Digital Object Identifier: 10.1109/TPS.2004.823975

16. **N. Yu. Babaeva** and J. K. Lee, "Dust Grain Charging in Developing Air Plasma", *IEEE Trans. Plasma Sci. (IEEE Transactions on Plasma Science)* vol. **32**, 823-828 (2004). http://ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=1308561 Link using DOI: http://dx.doi.org Enter Digital Object Identifier: 10.1109/TPS.2004.830724

17. J. K. Lee, O. V. Manuilenko, **N. Yu. Babaeva**, H. C. Kim, and J. W. Shon, "Ion Energy Distribution Control in Single and Dual Frequency Capacitive Plasma Sources", *Plasma Sources Sci. Technol. (Plasma Sources Science and Technology)* vol. **14**, 89-97 (2005). http://iopscience.iop.org/0963-0252/14/1/012 Link using DOI: http://dx.doi.org Enter Digital Object Identifier: 10.1088/0963-0252/14/1/012

18. **N. Yu. Babaeva**, J. K. Lee and J. W. Shon, "Capacitively coupled plasma source operating in Xe/Ar mixtures", *J. Phys. D: Appl. Phys. (Journal of Physics D: Applied Physics)* vol. **38**, 287-299 (2005). http://iopscience.iop.org/0022-3727/38/2/014/ Link using DOI: http://dx.doi.org Enter Digital Object Identifier: 10.1088/0022-3727/38/2/014

19. **N. Yu. Babaeva**, J. K. Lee, J. W. Shon and E. A. Hudson, "Oxygen Ion Energy Distributions: Role of Ionization, Resonant and Non-Resonant Charge Exchange Collisions", *J. Vac. Sci Technol. A (Journal of Vacuum Science and Technology)* vol. **23**, 799-704 (2005). http://avspublications.org/jvsta/resource/1/jvtad6/v23/i4/p699_s1 Link using DOI: http://dx.doi.org Enter Digital Object Identifier: 10.1116/1.1943451

20. R. Arakoni, D. Shane Stafford, **N. Yu. Babaeva** and M. J. Kushner "$O_2(^1\Delta)$ Production in Flowing He/O_2 Plasmas: II. 2-dimensional Modeling", *J. Appl. Phys. (Journal of Applied Physics)* vol. **98**,

073304 (2005). http://jap.aip.org/resource/1/japiau/v98/i7/p073304_s1 Link using DOI: http://dx.doi.org Enter Digital Object Identifier: 10.1063/1.2076428

21. **N. Yu. Babaeva**, A. N. Bhoj and Mark J. Kushner, "Streamer Dynamics in Gases Containing Dust Particles", *Plasma Sources Sci. Technol. (Plasma Sources Science and Technology)* vol. **15**, 591-602 (2006). http://iopscience.iop.org/0963-0252/15/4/001/ Link using DOI: http://dx.doi.org Enter Digital Object Identifier: 10.1088/0963-0252/15/4/001

22. **N. Y. Babaeva**, R. A. Arakoni and Mark J. Kushner, "Production of $O_2(^1\Delta)$ in Flowing Plasmas Using Spiker-Sustainer Excitation", *J. Appl. Phys. (Journal of Applied Physics)* vol. **99**, 113306 (11pp) (2006). http://jap.aip.org/resource/1/japiau/v99/i11/p113306_s1 Link using DOI: http://dx.doi.org Enter Digital Object Identifier: 10.1063/1.2199387

23. **N. Yu. Babaeva** and M. J. Kushner, "Penetration of Plasma into the Wafer-Focus Ring Gap in Capacitively Coupled Plasmas", *J. Appl. Phys. (Journal of Applied Physics)* vol. **101**, 113307 (11pp) (2007). http://jap.aip.org/resource/1/japiau/v101/i11/p113307_s1 Link using DOI: http://dx.doi.org Enter Digital Object Identifier: 10.1063/1.2736333

24. **N. Yu. Babaeva,** R. A. Arakoni and Mark J. Kushner, "$O_2(^1\Delta)$ Production in High Pressure Flowing He/O_2 Plasmas: Scaling and Quenching ", *J. Appl. Phys. (Journal of Applied Physics)* vol. **101**, 123306 (13pp) (2007). http://jap.aip.org/resource/1/japiau/v101/i12/p123306_s1 Link using DOI: http://dx.doi.org Enter Digital Object Identifier: 10.1063/1.2743878

25. R. A. Arakoni, **N. Y. Babaeva**, and Mark J. Kushner, "$O_2(^1\Delta)$ Production and Gain in Plasma Pumped Oxygen-Iodine Lasers: Consequences of NO and NO_2 Additives", *J. Phys. D: Appl. Phys. (Journal of Physics D: Applied Physics)* vol. **40**, 4793-4809 (2007). http://iopscience.iop.org/0022-3727/40/16/009/ Link using DOI: http://dx.doi.org Enter Digital Object Identifier: 10.1088/0022-3727/40/16/009

26. **N. Y. Babaeva** and Mark J. Kushner, "Ion Energy and Angular Distributions into the Wafer- Focus Ring Gap in Capacitively Coupled Discharges", *J. Phys. D: Appl. Phys. (Journal of Physics D: Applied Physics)* vol. **41**, 062004 (2008). http://iopscience.iop.org/0022-3727/41/6/062004/ Link using DOI: http://dx.doi.org Enter Digital Object Identifier: 10.1088/0022-3727/41/6/062004

27. **N. Yu. Babaeva** and Mark J. Kushner, "Streamer Branching: The Role of Inhomogeneities and Bubbles", *IEEE Trans. Plasma Sci. (IEEE Transactions on Plasma Science)* vol. **36,** 892-893 (2008). http://ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=4509585 Link using DOI: http://dx.doi.org Enter Digital Object Identifier: 10.1109/TPS.2008.922434

28. **N. Yu. Babaeva** and Mark J. Kushner, "Effect of Inhomogeneities On Streamer Propagation Part I: Intersection with Isolated Bubbles and Particles", *Plasma Sources Sci. Technol. (Plasma Sources Science and Technology)* vol. **18**, 035009 (15pp) (2009). http://iopscience.iop.org/0963-0252/18/3/035009/ Link using DOI: http://dx.doi.org Enter Digital Object Identifier: 10.1088/0963-0252/18/3/035009

29. **N. Yu. Babaeva** and Mark J. Kushner, "Effect of Inhomogeneities On Streamer Propagation Part II: Streamer Dynamics in High Pressure Humid Air with Bubbles", *Plasma Sources Sci. Technol. (Plasma Sources Science and Technology)* vol. **18**, 035010 (2009). http://iopscience.iop.org/0963-0252/18/3/035010/ Link using DOI: http://dx.doi.org Enter Digital Object Identifier: 10.1088/0963-0252/18/3/035010

30. **N. Y. Babaeva** and Mark J. Kushner, "Structure of Positive Streamers Inside Gaseous Bubbles Immersed in Liquids", *J. Phys. D: Appl. Phys. (Journal of Physics D: Applied Physics)* vol. **42**, 32003 (5pp) (2009). http://iopscience.iop.org/0022-3727/42/13/132003/ Link using DOI: http://dx.doi.org Enter Digital Object Identifier: 10.1088/0022-3727/42/13/132003

31. **N. Yu. Babaeva** and Mark J. Kushner, "Intracellular Electric Fields Produced by Dielectric Barrier Discharge Treatment of Skin", *J. Phys. D: Appl. Phys. (Journal of Physics D: Applied Physics)* vol. **43,** 185206 (12pp) (2010). http://iopscience.iop.org/0022-3727/43/18/185206/ Link using DOI: http://dx.doi.org Enter Digital Object Identifier: 10.1088/0022-3727/43/18/185206

32. B. S. Sommers, J. E. Foster, **N. Y. Babaeva** and Mark J. Kushner, "Observations of Electric Discharge Streamer Propagation and Capillary Oscillations on the Surface of Air Bubbles in Water", *J. Phys. D: Appl. Phys. (Journal of Physics D: Applied Physics*) vol. **44**, 082001 (6pp) (2011). http://iopscience.iop.org/0022-3727/44/8/082001 Link using DOI: http://dx.doi.org Enter Digital Object Identifier: 10.1088/0022-3727/44/8/082001

33. **N. Yu. Babaeva** and Mark J. Kushner, "Dynamics of Dielectric Barrier Discharges Over Wounded Skin", *IEEE Trans. Plasma Sci. (IEEE Transactions on Plasma Science)* vol. **39**, no. 11, p. 2964-2965, November 2011. http://ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=5753947 Link using DOI: http://dx.doi.org Enter Digital Object Identifier: 10.1109/TPS.2011.2126604

34. **N. Yu. Babaeva** and Mark J. Kushner, "Ion Energy and Angular Distributions onto Polymer Surfaces Delivered by Dielectric Barrier Discharge Filaments in Air: I. Flat Surfaces", *Plasma Sources Sci. Technol. (Plasma Sources Science and Technology)* vol. **20**, 035017 (11pp) (2011). http://iopscience.iop.org/0963-0252/20/3/035017 Link using DOI: http://dx.doi.org Enter Digital Object Identifier: 10.1088/0963-0252/20/3/035017

35. **N. Yu. Babaeva** and Mark J. Kushner, "Ion Energy and Angular Distributions onto Polymer Surfaces Delivered by Dielectric Barrier Discharge Filaments in Air: II. Particles", *Plasma Sources Sci. Technol. (Plasma Sources Science and Technology)* vol. **20**, 035018 (8pp) (2011). http://iopscience.iop.org/0963-0252/20/3/035018 Link using DOI: http://dx.doi.org Enter Digital Object Identifier: 10.1088/0963-0252/20/3/035018

36. Mark J. Kushner, **Natalia Yu. Babaeva**, "Fundamentals of Gas Phase Plasmas for Treatment of Human Tissue", in: *Studies in Health Technology and Informatics*, vol. **163** (2011). Medicine Meets Virtual Reality 18 – NextMed. (Edited by James D. Westwood, Susan W. Westwood, Li Felländer-Tsai, Randy S. Haluck, Helene M. Hoffman, Richard A. Robb, Steven Senger, Kirby G. Vosburgh) http://www.booksonline.iospress.nl/Content/View.aspx?piid=19328 Link using DOI: http://dx.doi.org Enter Digital Object Identifier: 10.3233/978-1-60750-706-2-297

37. B. Niermann, T. Hemke, **N. Y. Babaeva,** M. Boeke, Mark J. Kushner, T. Mussenbrock and J. Winter, "Spatial dynamics of helium metastables in sheath or bulk dominated rf micro-plasma jets", *J. Phys. D: Appl. Phys. (Journal of Physics D: Applied Physics*) vol. **44** 485204 (7pp) (2011) http://iopscience.iop.org/0022-3727/44/48/485204 Link using DOI: http://dx.doi.org Enter Digital Object Identifier: 10.1088/0022-3727/44/48/485204

38. **Natalia Yu. Babaeva,** Ning Ning, David B. Graves and Mark J. Kushner, "Ion Activation Energy Delivered to Wounds by Atmospheric Pressure Dielectric Barrier Discharges: Sputtering of Lipid-like Surfaces", *J. Phys. D: Appl. Phys. (Journal of Physics D: Applied Physics*) vol. **45** 115203 (12pp) (2012). http://iopscience.iop.org/0022-3727/45/11/115203/ Link using DOI: http://dx.doi.org Enter Digital Object Identifier: 10.1088/0022-3727/45/11/115203

Selected Conference and Workshop Presentations

39. **N. Yu. Babaeva**, A. Kh. Mnatsakanyan and G. V. Naidis, "On the Propagation of Microwave Discharge in Nitrogen Towards the Source of Electromagnetic Radiation", *Proceedings of the XIX International Conference on Phenomena in Ionized Gases*, Belgrade, Yugoslavia, 10-14 July 1989, pp. 432-433 (1989).

40. **N. Yu. Babaeva**, A. Kh. Mnatsakanyan and G. V. Naidis, "Breakdown and Discharge Propagation in Microwave Fields in Inert and Molecular Gases", *Proceedings of the 3rd International Conference on Properties and Applications of Dielectric Materials*, Tokyo, Japan, 8-12 July 1991, vol. **2**, pp. 832-835 (1991).

41. **N. Yu. Babaeva**, A. Kh. Mnatsakanyan and G. V. Naidis, "Modelling of Shock Wave Propagation in a Developing Discharge in Nitrogen", *Proceedings of the 19th International Symposium on Shock Waves, Shock Waves at Marseille II: Physical-chemical processes and nonequilibrium flow;* Université de Provence, Marseille, France, July 26-30, 1993. (R. Brun and L. Z. Dumitrescu, Eds., Springer-Verlag, Heidelberg, Germany, vol. **2**, pp. 387-389, 1995).

42. **N. Yu. Babaeva** and G. V. Naidis, "2D Model of Streamer Propagation in Non-uniform Electric Fields", *Proceedings of the 11th International Conference on Gas Discharges and Their Applications*, Tokyo, Japan, September 10-15, vol. **2**, pp. 488-491 (1995).

43. **N. Yu. Babaeva** and G. V. Naidis, "Two-Dimensional Simulation of Positive and Negative Streamers in Air", *Proceedings of the 5th International Symposium on High Pressure Low Temperature Plasma Chemistry* (HAKONE V), Milovy, Czech Republic, September 2-4, 1996, pp. 128-132 (1996).

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